

Expect the Unexpected: A Role for Behavioral Economics in Understanding the Impact of Cost-Sharing on Emergency Department Utilization

Albert Tzeel, MD, MHSA; Jack Brown, BA

Stakeholder Perspective, page 255

Background: As employers and payers address increasing healthcare costs, they resort to the tenets of classical economics: if one increases the price for a service (defined as an individual's cost-sharing), then that individual's demand for services should decrease. This, however, may not necessarily be true, and raises the question of whether increased cost-sharing for emergency department services will lead to decreased utilization of those services as would be expected in classical economics.

Objective: To assess the effect of emergency department cost-sharing on patient utilization of emergency department services.

Method: In 2002, we retrospectively reviewed 2001 claims and identified 797 members who have had at least 2 nonemergent visits to the emergency department. This cohort was comprised of members with high emergency department utilization patterns who also had potentially differing emergency department copayment changes from one health insurance plan year to the next. Participants had to be covered by Humana for a minimum of 12 consecutive months. Of the original cohort, 415 remained covered by Humana after the end of the first year, 322 remained covered after the second year, and 194 after the end of the third year. After completions of three 12-month blocks of time with appropriate claims run out, we assessed changes in the cohort's emergency department encounters from the previous year to the current year relative to emergency department copayment changes, using matched pairs *t*-test.

Results: Surprisingly, in the first 12 months, reductions in emergency department copayments resulted in decreases in patient utilization (–58.3% change, $P < .007$), and increases in emergency department copayment resulted in an increased utilization (1096.0% change, $P < .001$). This unexpected trend continued in the second and third periods. Overall, in our cohort, increases in emergency department copayments were significantly associated with increased emergency department encounters by different individuals in each of the 3 study periods. In contrast, in the 2 groups with no increases in emergency department copayments, utilization of these services decreased or remained flat.

Conclusion: When assessing the need for emergency department services, many factors besides cost play a role in choosing to obtain emergency department care, including individual assessments of the probability of a given illness and the financial or temporal implications for the care sought in terms of “gains” or “losses” relative to a reference point. Behavioral economics can therefore play a role in understanding why healthcare consumers behave as they do. The implications of behavioral economics need to be factored in when considering a healthcare benefit design.



Albert Tzeel

Am Health Drug Benefits.
2010;3(4):248-256.
www.AHDBonline.com
Disclosures are at end of text

Dr Tzeel is Market Medical Officer, and Mr Brown is Financial Analyst, Humana, Inc, Great Lakes Region, Milwaukee, WI.

We economists always think that waving money under people's noses will make them behave according to some theoretical script. But we've tried that with healthcare for decades and it hasn't worked. Healthcare isn't just about financial incentives; it's also about anxiety, fear, habit, guan-xi—a Chinese word that, loosely translated, means "family or business ties"—and professional pride. We've neglected to study the impact that human behavior has on the system, and I don't think we can do much to improve it unless we address the noneconomic dimensions of healthcare issues.¹

—Uwe Reinhardt, PhD

Expect the unexpected, or you won't find it."² This admonition, offered by the Greek Heraclitus more than 2500 years ago, still rings true today. Employer-sponsored healthcare coverage continues to subscribe to classical economics with respect to demand and price. Many employers providing insurance coverage believe that if they shift costs to those employees who consume medical care by increasing copayments or coinsurance, then those individuals will respond to a new price point for medical services by curbing their own demand for healthcare.³⁻⁷

Choices on whether to utilize healthcare can be made in a rational context when one does not have the pressure of a limited time horizon in which to make the decision. In an emergency situation, however, seconds count in the choice to seek care: whether a true emergency exists lies within the discretion and perception of the consumer making that decision.

O'Grady and colleagues showed that cost-shifting has an impact on emergency department (ED) use.⁸ Selby and colleagues showed that after introducing a copayment ranging from \$25 to \$35 for using the ED, utilization decreased significantly, with the largest decreases in lesser severity of illness.⁹ Yet, even with such cost-shifting, ED utilization continues to increase.¹⁰⁻¹² If cost-shifting by itself cannot control increasing ED utilization, what else could be playing a role? Do people behave differently from what is predicted under classical economics? And, if so, why? Are people irrational when seeking ED services? Given the premise that people are irrational decision makers when it comes to ED utilization, and as part of a broader educational initiative to decrease ED utilization in southeastern Wisconsin, we at Humana wanted to confirm that increased cost-sharing (ie, ED copayment increases) for ED services indeed resulted in decreases in ED utilization.

Methods

Data Patterns

Early in 2002, we reviewed 2001 data for Humana Milwaukee HMO ED utilization. Through this review we identified a cohort of 797 unique members for a self-care promotion. Each of these individuals had at least 2

KEY POINTS

- In designing health insurance coverage, many employers believe that shifting some of the cost of medical care to employees will reduce demand for such care and lower utilization.
- However, some studies have suggested that emergency department utilization continues to rise, regardless of any copayment considerations.
- This raises the question about any potential association between cost-shifting and emergency department utilization.
- An analysis of the association between cost-sharing and emergency care utilization unexpectedly showed that increasing emergency department copayments was significantly associated with increased, rather than decreased, emergency department utilization.
- In contrast, among employees with no increase in emergency department copayments, utilization decreased or remained flat.
- The authors suggest that there is a distinct role for behavioral economics when attempting to control healthcare costs. Contrary to classical economic theory, people often do not make rational decisions when it comes to their health.
- To affect behavior change in covered populations, employers and payers must understand how people view medical risk, especially potentially emergency risk, unlike other risks, and incorporate behavioral economics in their benefit design decisions.

nonemergent ED visits that were amenable to self-care, according to informational books we provided to all of them,^{13,14} as part of our study. Many in the cohort had ED copayment adjustments for a given benefit year through their employer-sponsored health insurance instituted to mitigate premium cost increases.

We followed this cohort for 3 consecutive 12-month blocks. At the end of each 12-month period, in addition to assorted demographic data, we collected information on ED utilization and on benefit changes (including ED

Table 1 General Demographic Data for Available Cohort after Second Year

Characteristic	Total (N = 322)	Children (N = 50)	Adults (N = 272)	Male (N = 113)	Female (N = 209)
Average age, yr (SD)	32.6 (18.1)	5.0 (3.7)	37.7 (14.9)	31.7 (20.0)	33.1 (17.1)
Males, N (%)	113 (35.1)	21 (42.0)	92 (33.8)	113 (100)	0 (0.0)

SD indicates standard deviation.

copayments) for members who remained with Humana throughout that entire 12-month period. Collecting this information for consecutive years allowed for direct comparison with each preceding period.

Data analysis at the conclusion of each time period showed that of the original 797 participants, 415 (52.1%) remained covered by Humana after the first year, 322 (40.4%) remained covered after the second year, and 194 (24.3%) remained Humana members when data were collected after the third year.

Statistical Analysis

We realize that observational analysis could not substitute for a well-designed study, but we were compelled to examine the findings statistically to see if the data showed something of potential interest and, if it did, to proffer a possible explanation.

Statistical analyses were performed using Microsoft Excel 97 for Windows and XLSTAT, a Microsoft Excel add-in package.¹⁵ We assessed changes in the cohort's ED encounters from the previous year to the current one relative to ED copayment changes, using matched pairs *t*-test.

Results

Demographics

As noted, study participants had to remain active Humana members for an entire 12-month block of time. Because the study period overlapped calendar years, we lost some members at the time of their employer group's renewal (especially on January 1). **Table 1** outlines the demographic data for 322 members who were active through the first 2 years, categorized by age and by sex.

Changes in ED Utilization Associated with Copayment Adjustments

In reviewing the data, we found a specific pattern in each year: the groups who had an ED copayment increase had an increased number of ED visits (**Table 2**). As shown in Table 2, in the first year, if the ED copayment increased in a given period (relative to the 12-month period before it), ED utilization actually increased by a factor of nearly 12. Given the low rate of ED utilization

in the group with the increasing ED copayment in the preceding period, this finding might have simply been a case of regression to the mean. But what if we find similar patterns during the following 2 years?

In the second year, a similar pattern emerged. For the 2 groups whose ED copayment did not increase during this period, decreases in ED utilization occurred. However, in the third group, whose ED copayment increased during the period, we observed a significant ($P = .022$) and rather large increase in ED utilization—that is, an average increase of nearly 1 full ED visit for each person in that group, for a total of 46 ED visits.

A comparable pattern continued during the third year. In the groups whose ED copayment did not increase, we found either a small, nonsignificant increase or a significant decrease in ED utilization. The remaining group continued to show that when the ED copayment increased in a given period, a noteworthy, albeit not significant ($\alpha = .05$, $P = .09$) increase in ED utilization occurred.

All 3 time frames showed the same counterintuitive pattern: ED copayment increases were associated with increased ED utilization. Although there were no individuals who had ED copayment increases in 2 consecutive periods during any of the 3 intervals, we observed consistency among unique individuals' responses to ED copayment increases.

Discussion

Significant Implications for Employers

Our original presumption was that individuals respond to having their ED copayment increased by decreasing their ED utilization, according to classical economics. But that is not what our data revealed to us year after year. Why?

This inconsistency has tremendous implications for employer groups that provide health benefits to their employees. A given employer may choose to rely on the tenets of classical economics (ie, increasing ED copayments to promote decreased ED utilization). Yet, without a general understanding of key ideas from behavioral economics, that employer may not necessarily achieve the desired results.

Table 2 Changes in Average ED Visits in 3 Years, by ED Copayment Changes

Year (period)	Patients, N	ED visits per person at onset of period	ED visits per person at end of period	Change in ED visits per person	Change, %	P
First 12 mo						
Group 2: No copay changes	304	0.80	2.41	1.61	201.3	<.001
Group 2: Copay decreased	8	3.00	1.25	-1.75	-58.3	<.007
Group 3: Copay increased	103	0.23	2.75	2.52	1096.0	<.001
All participants, period 1	415	0.70	2.47	1.77	252.9	<.001
Second 12 mo						
Group 1: No copay changes	226	0.98	0.91	-0.07	-7.9	NS
Group 2: Copay decreased	47	1.77	0.81	-0.96	-54.2	<.001
Group 3: Copay increased	49	0.92	1.86	0.94	102.2	.022
All participants, period 2	322	1.08	1.04	-0.04	-3.7	NS
Third 12 mo						
Group 1: No copay changes	176	0.85	0.97	0.12	14.1	NS
Group 2: Copay decreased	11	2.09	0.36	1.73	-82.8	<.003
Group 3: Copay increased	7	0.57	1.29	0.72	126.3	NS
All participants, period 3	194	0.91	0.94	0.03	3.3	NS
ED indicates emergency department; NS, not significant ($\alpha = .05$).						

Several behavioral concepts may influence this finding and promote the association that our results show for ED utilization.

Prospect Theory: Behavioral Economics Explains Emergency Care Utilization

A review of our results showed an association in which, on average, if the ED copayment increased, then ED utilization increased as well. We speculate that there is a legitimate reason for this finding, and we defer on this to behavioral economics, specifically to “prospect theory.” This theory arose from experimental proof that people repeatedly violate the principles of expected utility theory when making particular decisions.

Prospect theory was first proposed by Kahneman and Tversky in 1979.¹⁶ Although a formal discussion of prospect theory is beyond the scope of this article, 2 of its key elements are pertinent to this discussion.

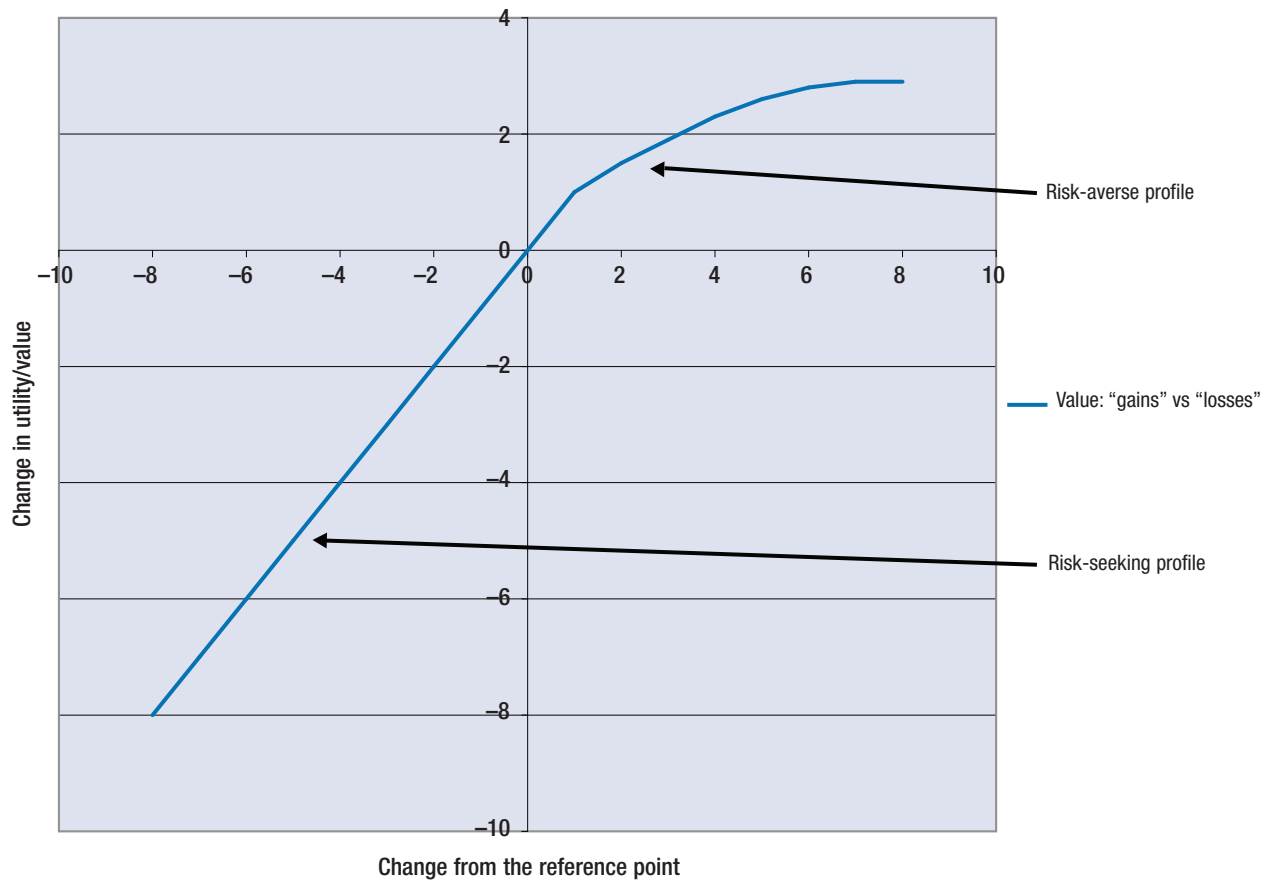
First, according to prospect theory, a person multiplies his or her distinct expected utility by a subjective probability. However, individuals tend to distort those probabilities by overweighting low-probability events and underweighting high-probability events (eg, if a child only has the symptoms of fever, neck pain, and difficulty swallowing, the more likely probability of

streptococcal pharyngitis may be underweighted, whereas the less likely probability of bacterial meningitis may be overweighted).

This finding would imply that the probability of a particular healthcare event (eg, vomiting in gastroenteritis, generalized fever, ear pain) being extremely serious or even life-threatening would most likely be exaggerated by the individual or the caregiver. Burns and colleagues corroborate that the overweighting of the high-risk, low-probability event tends to promote a utilization profile of increased consumption.¹⁷

Second, individuals view these expected utilities as changes from a reference point.¹⁸ With respect to “changes from a reference point,” Kahneman and Tversky propose that individuals make decisions as if they had a “value” function for gains and losses (Figure).¹⁶ The horizontal axis in the Figure reflects either monetary gain (to the right) or monetary loss (to the left) relative to one’s reference point (ie, the origin). The value function shows that individuals perceive losses as more significant than equivalent gains: the value function increases the slope as one moves to the right, until the origin, and decreases the slope as one moves to the right, away from the origin.

Baron describes this Figure as meaning “that, for sim-

Figure Prospect Theory Value Function

Adapted from Kahneman D, et al. *Econometrica*. 1979;47:263-292.

ple gambles, subjects tend to avoid risks in the domain of gains and tend to seek risks in the domain of losses where gains and losses are defined in terms of expected monetary change from their reference point.”¹⁸ An increased ED copayment, relative to the previous copayment, would in theory tend to make an individual “risk-seeking,” because a potential loss, coupled with an exaggerated probability for a potentially adverse event, drives ED utilization.

Perceived value versus cost. In other words, there is more perceived value (because of the higher ED copayment/“loss”) for that ED visit than existed before the copayment change. In addition, from a cognitive standpoint, the individual can rationalize perceived value in the decision to seek services despite a greater personal financial cost. As early as 1969, Doob and colleagues noted that according to cognitive dissonance theory, the more something costs, the more people find value in it, and the more they can feel internal pressure to buy it.¹⁹

Prospect theory’s role may perhaps be better viewed

through the following example. Two families each have a young child who complains of a nonspecific sore throat on a Sunday afternoon. Each family is concerned that the child has strep throat, which may develop into rheumatic fever or worse. For family A, the most recent insurance changes resulted in a \$50 decrease in ED copayment (from \$100 to \$50). For family B, the most recent insurance changes have resulted in a \$50 increase in ED copayment (from \$50 to \$100).

Family A may view this event as a choice between 2 alternatives—going to the ED removes a certain monetary gain (compared with last year) for diagnosing a potentially low-probability event—estimated in the past as a probability of 11% for strep throat for all ED visits in which the chief complaint is sore throat, and as 15% to 36% in the pediatric population.^{20,21} Family B may also view this event as a choice between 2 alternatives—going to the ED may yield a greater monetary loss (compared with last year), but the cost of not going may be even higher—the financial cost and/or disability

incurred by the child whose strep throat develops into something worse, such as acute rheumatic fever in 0.01% of all childhood throat infections.^{20,21}

For this example, we use a cost of approximately \$25,000 for each case of acute rheumatic fever (adapted from Webb and others).²² From an expected value standpoint, family A now views the decision as a choice between a certain “gain” of \$50 versus only a possible “gain” of \$2.50 ($0.0001 \times \$25,000$). The \$2.50 is considered the expected financial value for diagnosing 1 case of acute rheumatic fever; it represents the “cost” of removing uncertainty in diagnosis.

Certain versus possible gain. This value in information gain does not include additional potential costs of the disability or of the financial impact as a result of missed time off from work. Family A is risk-averse and would wait to see if the symptoms worsen before seeking ED care, because a sure gain of \$50 is preferable to a possible gain of only \$2.50. Family B, however, views the choice as one of a sure loss of \$50 compared with only a risk of a loss of \$2.50. For them, this choice is easy—taking a chance on losing only \$2.50 is significantly better than losing \$50 for sure.

Studies also show that anything constraining one’s sense of an unlimited future shifts motivations and priorities away from a future orientation toward a present orientation.²³ Family B, then, is “risk-seeking” and therefore seeks ED care for their child. If urgent care were substituted for ED care, neither family in our example would change its decision unless the urgent care copay/personal cost was less than \$2.50. Even rapid-care clinics found in most national drugstore chains charge more than that for a typical visit. In fact, our data showed that the greater the dollar differential between ED visit copays and copays at alternate sites of care (eg, office visits or urgent care), the more likely the member was to go to the ED.

The Psychology of Time: Behavioral Economics Explains Non-Emergency Care Utilization

Another way of looking at ED-seeking behavior that would be consistent with our data is to apply the “psychology of time.” For the purposes of explaining the patterns we saw earlier, the economic curves of demand versus price perform adequately for most conditions in which the majority of the “cost” to the individual is time, because the reference value for the ED copayment did not change.

Tucker and Davison suggest that, “When monetary costs to consumers are minimal or nonexistent, time costs function to reduce and regulate demand....Once time is ‘spent,’ it cannot be recovered as one might recover a monetary loss or replace a tangible good.”²⁴

Time, then, becomes the “currency of choice” when money is not a factor.

This may explain why, when an ED copayment change was not the key issue (ie, it either had not changed or had decreased), individuals tended to consider time their “currency” and might have chosen to use self-care strategies over seeking ED care.

In fact, probably because of time’s lack of fungibility, studies show that in hypothetical choice situations, individuals tend to be either more risk-averse or risk-neutral about potential time losses, but they tend to be more risk-seeking with respect to monetary losses.²⁵ Although Leclerc and colleagues based their conclusions on hypothetical choices,²⁵ these findings have tremendous implications for employer groups who provide health benefits.

A given employer may choose to rely on the tenets of classical economics (ie, increasing ED copayments to promote decreased ED utilization, or promotion of a wider gap between ED copayments and office visit copayments to drive utilization toward the physician’s office as an ED substitute). Yet, without a general understanding of, as well as an incorporation of, some basic ideas from behavioral economics, those employer groups may not necessarily achieve the results they desire.

Phelps once asked if anybody behaved as a “rational economic actor” in the healthcare market.²⁶ The answer comes from Heraclitus’ quote at the beginning of this present article, “expect the unexpected, or you won’t find it.”²

Limitations

As with any study, there are potential limitations to interpreting our findings. First, we did not collect data on certain specific characteristics of the cohort. Oftentimes, these traits may influence patient behavior and may help to explain why ED encounter rates varied at the onset of our review period and in response to changing ED copayments. It is known, for example, that patient characteristics, such as socioeconomic status and chronicity of illness, can impact ED utilization.^{27,28} However, all the individuals for whom we reviewed data were insured and therefore relatively insulated from the actual cost of the ED visit (outside of an expected copayment). We would therefore expect that the results would tend to be biased toward an increased ED copayment yielding decreased ED utilization and not the other way around (assuming the effect of classical economics).

Second, a selection bias may also be noted, because the cohort from which all members were drawn came from an initial pool of “nonemergent ED utilizers.” Such a cohort may prejudice the results.²⁹ However, just as we see a potential association in our data between ED utilization and increasing ED copayments, the door now

opens for assessing other areas of potential individual-driven overutilization with increased cost-sharing (eg, specialist office visits).

Third, we cannot state with complete certainty that we did not observe a simple regression to the mean. Regression to the mean effects, however, can take several years to manifest, and it is therefore possible that this cohort could see a return to baseline ED utilization over the next several years.³⁰

Conclusion

Analyzing how individuals reconcile their cost for emergency care relative to obtaining emergent services can lead to the discovery of pertinent facts that can have some bearing on the control of healthcare costs. First and foremost, there is a distinct role for behavioral economics within the sphere of controlling healthcare costs. To achieve behavior changes in their covered populations, employers and payers must understand how people view medical risk, how they make decisions regarding financial tradeoffs, and how information alters these perceptions. Attempting to influence one area, such as personal financial responsibility, without fully understanding the systemic implications, can be shortsighted.

Second, although classical economic theory still exerts the most influence in health economics, to affect behavior change one must realize that people do not tend to be rational actors when it comes to their health.

After taking account of the potential impact of behavioral economics in ED or other medical care utilization, further evaluation and analysis are certainly warranted to better understand how individuals choose to respond to increasing financial responsibility in the context of overall medical care. If employers and payers want to contain increasing ED (or potentially other medical care) utilization, they will need to consider the implications of behavioral economics in their benefit design and programmatic decisions. ■

Acknowledgment

Financial support for this article was provided by Humana Insurance Corporation, a subsidiary of Humana Inc, Louisville, Kentucky (doing business in Wisconsin). The funding agreement insured the authors' independence in designing our pilot study, interpreting the data, and writing the article.

Disclosure Statement

Dr Tzeel and Mr Brown did not report any potential conflict of interest.

References

1. McCue MT. Whither sociology? Princeton economist Uwe Reinhardt says health-care needs to account for human behavior, not just dollar signs. *Managed Healthcare Executive*. September 1, 2009. <http://managedhealthcareexecutive.modernmedicine.com/mhe/Executive+Profile/Whither-sociology/ArticleStandard/Article/detail/121923?searchString=whither%20sociology>. Accessed May 1, 2010.
2. Von Oech R. *Expect the Unexpected (Or You Won't Find It)*. San Francisco, CA: Berrett-Koehler; 2002.
3. Huskamp HA, Deverka PA, Epstein AM, et al. The effect of incentive-based formularies on prescription-drug utilization and spending. *N Engl J Med*. 2003;349:2224-2232.
4. Piette JD, Heisler M, Wagner TH. Problems paying out-of-pocket medication costs among older adults with diabetes. *Diabetes Care*. 2004;27:384-391.
5. Lohr KN, Brook RH, Kamberg CJ, et al. Use of medical care in the Rand Health Insurance Experiment: diagnosis- and service-specific analyses in a randomized controlled trial. *Med Care*. 1986;24(suppl 9):S1-S87.
6. Cherkin DC, Grothaus L, Wagner EH. The effect of office visit copayments on preventive care services in an HMO. *Inquiry*. 1990;27:24-38.
7. Simon GE, VonKorff M, Durham ML. Predictors of outpatient mental health utilization by primary care patients in a health maintenance organization. *Am J Psychiatry*. 1994;151:908-913.
8. O'Grady KE, Manning WG, Newhouse JP, Brook RH. The impact of cost sharing on emergency department use. *N Engl J Med*. 1985;313:484-490.
9. Selby JV, Fireman BH, Swain BE. Effect of a copayment on use of the emergency department in a health maintenance organization. *N Engl J Med*. 1996;334:635-641.
10. Young GP, Wagner MB, Kellerman AL, et al. Ambulatory visits to hospital emergency departments. Patterns and reasons for use. 24 hours in the ED study group. *JAMA*. 1996;276:460-465.
11. Tufts Managed Care Institute. Emergency department utilization: trends and management. November-December 2001. www.thci.org/downloads/topic1112_01.pdf. Accessed July 7, 2010.
12. US Government Accountability Office. Report to the Chairman, Committee on Finance, US Senate. Hospital emergency departments: crowding continues to occur, and some patients wait longer than recommended time frames. GAO 09-347. April 2009. www.gao.gov/new.items/d09347.pdf. Accessed June 28, 2010.
13. Pantell RH, Fries JF, Vickery DM. *Taking Care of Your Child: A Parent's Guide to Complete Medical Care*. Reading, MA: Perseus Books; 1999.
14. Vickery DM, Fries JF. *Take Care of Yourself*. Cambridge, MA: Perseus Books; 2001.
15. XLSTAT Statistical Software. Paris, France: Addinsoft, 1995-2004.
16. Kahneman D, Tversky A. Prospect theory: an analysis of choice under risk. *Econometrica*. 1979;47:263-292.
17. Burns Z, Chiu A, Wu G. Overweighting of small probabilities. Prepared for Wiley Encyclopedia of Operations Research and Management Science. March 15, 2010. <http://faculty.chicagobooth.edu/george.wu/research/papers/burns%20chiu%20wu%202010%20Overweighting%20of%20Small%20Probabilities.pdf>. Accessed July 7, 2010.
18. Baron J. *Thinking and Deciding*. New York, NY: Cambridge University Press; 2000:268.
19. Doob AN, Carlsmith JM, Freedman JL, et al. Effect of initial selling price on subsequent sales. *J Pers Soc Psychol*. 1969;11:345-350.
20. Kaufman A, Murray D, Starita L, Brickner PW. Streptococcal sore throat follow-up program in a hospital clinic, New York City. *Public Health Rep*. 1975;90:369-372.
21. Linder JA, Bates DW, Lee GM, Finkelstein JA. Antibiotic treatment of children with sore throat. *JAMA*. 2005;294:2315-2322.
22. Webb KH. Does culture confirmation of high-sensitivity rapid streptococcal tests make sense? A medical decision analysis. *Pediatrics*. 1998;101:E2.
23. Zimbardo P, Boyd J. *The Time Paradox*. New York, NY: Free Press; 2008.
24. Tucker JA, Davison JW. Waiting to see the doctor: the role of time constraints in the utilization of health and behavioral health services. In: Bickel WK, Vuchinich RE, eds. *Reframing Health Behavior Change with Behavioral Economics*. Mahwah, NJ: Lawrence Erlbaum; 2000:219-264.
25. Leclerc F, Schmitt BH, Dube L. Waiting time and decision making: is time like money? *J Consumer Res*. 1995;22:110-119.
26. Phelps CE. *Health Economics*. New York, NY: HarperCollins; 1992.
27. Sun BC, Burstin HR, Brennan TA. Predictors and outcomes of frequent emergency department users. *Acad Emerg Med*. 2003;10:320-328.
28. Wong MD, Andersen R, Sherbourne CD, et al. Effects of cost sharing on care seeking and health status: results from the Medical Outcomes Study. *Am J Public Health*. 2001;91:1889-1894.
29. Zenner PA, Parke R, Mirkin DP, for Milliman. Insight into two analytical challenges for disease management. *Milliman Research Report*. April 2004. <http://publications.milliman.com/research/health-rr/archive/pdfs/Two-Analytical-Challenges-Disease-Management-RR04-01-04.pdf>. Accessed August 11, 2004.
30. Johnson A. Measuring DM's net effect is harder than you might think. *Manag Care*. 2003;12:28-32.

STAKEHOLDER PERSPECTIVE

Medical Homelessness and Emergency Department Utilization: Economic and Moral Implications

EMPLOYERS/PAYERS: The implications of behavioral economics may differ by medical condition and by geography. At PPG Industries, we wanted to verify the status of hospital admissions for acute coronary artery disease (CAD), in which the “concern” factor is self-evident in 29 of our geographically diverse, active working populations. We wanted to see the effect of copayment, coinsurance, or patient out-of-pocket (OOP) contribution, and the availability of primary care inside and outside the worksite. This may have scientific and philosophical implications.

We calculated the variance of acute CAD hospital admissions and emergency department (ED) visit rates per 1000 active employees, based on the presence or absence of (1) worksite wellness programs (high/low rank), (2) worksite occupational health professionals (ie, nurse) on staff, and (3) the availability of primary care physicians (PCPs) in the county where the worksite is located, according to the County Health Rankings.¹

In our data set, PCP availability rate at the county level is significantly associated with a reduction in CAD and in ED visit ($P < .05$) and CAD acute admissions rates per 1000 active employees ($P < .05$). Having worksite wellness programs (high rank) is associated with 2.8-fold fewer acute CAD admissions but has no effect on CAD-related ED visit rates. Having a worksite occupational health nurse on staff is associated with 2.1-fold fewer acute CAD admissions but has no effect on ED visit rates.

What is the role of patient copayment and coinsurance, namely, patient OOP contribution? As much as 48% of the variance in acute hospital admissions for CAD in 29 worksites is explained by 3 factors—worksite wellness ($P < .01$), worksite nurse ($P < .05$), and OOP cost ($P < .05$). These interactions are shown in the prediction profiler (**Figure, Panel A, page 256**).

The practical implications vary by factor. CAD admissions could be halved from 8/1000 to 4/1000 employees by increasing the OOP from 10% to 30%, or by having a worksite nurse or high-rank wellness programs on site. If a nurse and such programs are combined, the hospital admission rate is practically reduced to zero.

The implications of this are serious. Acting on the

behavioral economic ramifications would require a 30% penalty to “scare” half of the admissions away—an ethically questionable, and not plausible, solution. Instead, providing education and frontline professional assistance does provide a win-win situation, where patients seemingly are healthier and more informed decision makers.

What if we enter in the model the PCP availability at the county level? This overrides the significance of having a worksite nurse, confirms the relevance of worksite wellness programs, while OOP costs lose statistical significance (**Figure, Panel B, page 256**). This leads us to hypothesize that health education and primary care do matter, and that occupational nurse support to some extent compensates for the lack of “outside” primary care by providing some medical home function, where that is faltering.

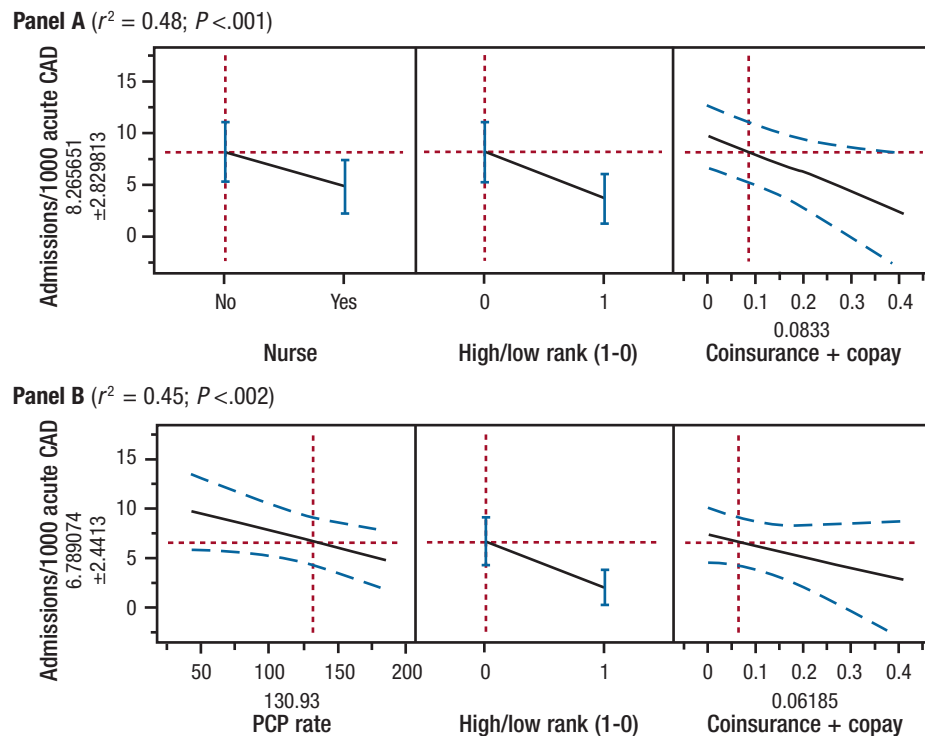
These results lead us to the philosophical argument. In the present study by Dr Tzeel and Mr Brown, it is unclear whether reducing the ED copayment was associated with discretionary spending on primary care and/or health promotion and, therefore, shifted purchasing from ED visits to primary care and/or wellness. But even if that were not the case, establishing a medical home would have tangible and intangible effects on many factors and behaviors.

In a fair system, a better incentive to counteract the overuse of ED rather than copayments would be to provide education and primary care. In sound bites, this may translate to, “If you want health benefits, find yourself a PCP first.” But the game is not neutral. If we could for a moment make room for evidence-based discussion instead of falling into our preferred prejudices, we would see that the system is such that primary care is penalized, because the provider requires time—good information is hard to organize, and there is no reimbursement for “medical intelligence” oversight.

Medical homelessness is attracting increasing attention.² Medical homelessness has been defined in a blog by Dr Bob as, “Not having access to a consistent familiar medical setting. Not having a care location where one is known, or where the medical information is accurate.”² In a recent article on medical homelessness published in *Health Affairs*, Jack Colwill, MD, describes what happens to educated and willing people

Continued

STAKEHOLDER PERSPECTIVE (Continued)

Figure Acute CAD Admission Rate per 1000 Active Employees (a multifactorial analysis)

CAD indicates coronary artery disease; PCP, primary care physician.

when they are left without primary care coordination in spite of a wealth of disjointed specialty care offerings.³ One can imagine what would happen to less educated people whose suffering may be needlessly magnified by their medical homelessness, despite their insurance access.

Health insurance companies pretending to become the medical home may introduce an additional moral hazard, where what is best for the patient is not necessarily what is best for their shareholders, because doctors are paid by procedures, not by outcomes, and are included in networks based on price and not on patient needs.

Dr Colwill describes how medical homes are discouraged by the payment system for physicians and by the nation's shortage of PCPs. Given the current US healthcare system, many patients end up being their own medical home and the prime healthcare decision makers, albeit without appropriate information, knowledge, or assistance. Patients are reduced to consumers vulnerable to sales pitches rather than informed citizens. In many instances, rather than patient empowerment, this becomes a case of patient

abandonment in a confusing, complex, fragmented and "dis"-integrated, when not adversarial, system. With primary care becoming increasingly scarce, notable primary care "deserts" are becoming evident in semirural areas.

So, we welcome behavioral economics rather than just "deterministic" economics; however, we should wonder if people "buy" not only based on their emotions but also based on what is available in their territory. In primary care "deserts," perhaps they accept what is for what is best, not knowing better, and end up "buying" emergency care because there is no other medical safe haven to fall back on. In that case, ED overuse is a symptom of medical homelessness, a deeper problem than mere access to health insurance.

1. County Health Rankings. 2010. <http://www.countyhealthrankings.org/>. Accessed July 26, 2010.
2. Dr Rob. The Problem of Medical Homelessness. Better Health Network. Opinion. Published September 2, 2009. <http://getbetterhealth.com/the-problem-of-medical-homelessness/> 2009.09.29. Accessed July 27, 2010.
3. Colwill JM. Narrative matters. A case of 'medical homelessness.' *Health Aff (Millwood)*. 2010;29:1067-1070.

Alberto M. Colombi, MD, MPH
Corporate Medical Director
PPG Industries, Pittsburgh, PA